Attachment 2

KELLERCO

DATE: May 4, 2001

TO: Rick Carr/Richard Calderon

FROM: C. Richard Keller

SUBJECT: Future Situation At Route 28/17 Intersection In Bealeton (Village) Service District

As part of the Bealeton Village planning effort, KELLERCO was requested to develop future traffic projections for this at-grade intersection along with related at-grade improvements necessary to achieve a reasonable peak hour level of service. In order to develop this information which can be used for not only detailing the Village Plan but also discussing the need for VDOT's proposed grade separated interchange, we have used the following technical process.

Step 1: Establish the "existing" 2000 AM/PM peak hour traffic situation at this intersection (and two adjacent Route 28 intersections) using available VDOT traffic data. Exhibit 1 depicts the AM and PM volumes.

Step 2: Project the "existing" 2000 AM/PM peak hour traffic volumes to 2010 and 2020 to reflect anticipated corridor and service district growth. To accomplish this, a +4% per year compounded growth rate was applied to Exhibit 1 volumes for both the Route 17 and 28 corridors. This + 4% growth rate was documented by VDOT's Mena Lockwood in a Route 28 memo dated July 5, 2000, which projected intersection traffic to 2020 and 2026. The result of applying the +4% compounded rate to the Exhibit 1 volumes is shown in Exhibit 2 (2010) and Exhibit 3 (2020).

Step 3: Next, HCS 2000 software was applied to the Exhibit 1, 2 and 3 AM and PM volumes to determine the current and future intersection levels of service without any additional roadway impacts. The results are summarized in Exhibit 4 and the HCS runs are in Appendix A.

Note that in 2001 all three intersections operate at acceptable LOS B or C. Traffic volumes for the intersection of Route 28/Schoolhouse Road are show on Exhibit 1, but were excluded from the analysis in 2010 and 2020. In 2001 the LOS is B 10.7 (AM) and B 10.8 (PM) at this intersection. LOS B and C are reasonable criteria for current "rural" conditions, but in 20 years, LOS D is a more reasonable LOS criteria as the area becomes more urbanized.

Corporate Headquarters
307 South Loudoun Street, Winchester, VA 22601, 540/535-0081, FAX 540/535-0109

By 2010, without additional roadway improvements the intersection of Route 28 and Oak Shade Road fails with E/D levels of service. The Route 28/17 intersection operates at LOS D/D, which exceeds an acceptable LOS C in 10 years. The Route 28/LHS intersection operates satisfactorily at LOS B and C.

By 2020, all three intersections fail without improvements since five of the six LOS's exceed LOS D, which is the criteria rather than LOS C in 20 years.

Step 4: Finally, various improvements were evaluated using HCS 2000 to determine the extent to which roadway widening could improve future intersectional operating efficiency to LOS C in 2010 and LOS D in 2020. The improvements and new LOS with the improvements implemented are shown in Exhibit 5 and the HCS runs are in Appendix B.

By 2010, the following improvements are needed at two intersections to achieve LOS C or better.

- Route 28/Oak Shade Road

  By providing an additional travel lane on Oak Shade Road, LOS D is achieved without signalization. Installing a signal would provide LOS C or better.

- Route 28/17

  Widening both Route 28 approaches to 4 lanes divided will provide LOS C/C.

  By 2020, a signalized (in 2010) Route 28/Oak Shade Road would operate at acceptable C/B LOS without widening the Route 28 corridor. Two locations would need to be improved.

- Route 28/17

  At the Route 28/17 intersection, the approach volumes are high enough on all approaches to warrant widening both the Route 28 and 17 approaches to six lanes at the intersection only. This would achieve LOS D/D. Since the Route 17 corridor would serve 40,000 to 45,000 vehicles per day by 2020 (see Exhibit 3), the entire Route 17 corridor would probably not be widened to six lanes until the volumes well exceed 50,000 vehicles per day.

  Also, the 2020 volumes projected in this study to not account for any traffic diversions from the Route 17 corridor back to an improved Springfield Bypass interchange or to a new Western Bypass, were it ever built, or to relocated Route 17 or Route 28 corridors per the preferred Bealeton – Remington committee access plan.

- Route 28/LHS

At the Route 28/LHS intersection, were Route 28 widened to 4 lanes divided, an acceptable LOS would be sufficient to achieve LOS C/C unsignalized.

Although not analyzed, the intersection of Route 28 and the shopping center will probably need to be signalized by 2010 and coordinated with the signal at Route 28/17.

Step 5: In summary, this analysis has indicated that 2010 AM/PM traffic can be accommodated by widening a section of Route 28 from east of Oak Shade Road to east of the shopping center entrance and signalizing/widening one approach at the Route 28/Oak Shade Road intersection.

By 2020, Route 28 would need to be widened to six lanes divided from east of Oak Shade Road to east of the shopping center and to 4 lanes divided from east of the shopping center to east of the Liberty High School intersection. In addition, the Route 17 corridor would need to be widened to 6 lanes divided only at the Route 28 intersection.

cc: Charlie Lamb

Please note that the referenced exhibits in this technical memorandum are available for inspection in the Fauquier County Department of Community Development, 40 Culpeper Street (3rd Floor), Warrenton, VA.